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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/688,420 | 10/16/2003 | John L. Klocke | 6884-65576 | 2239 |

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| ART UNIT | PAPER NUMBER |
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| 1753 | |

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/688,420 | KLOCKE ET AL. | |
| | Examiner | Art Unit | |
| | Edna Wong | 1753 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *01 May 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-69* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-69* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

This is in response to the Amendment dated May 1, 2006. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

***Response to Arguments***

Claim Rejections - 35 USC § 112

I. Claims **55-65** have been rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for *electrodepositing*, does not reasonably provide enablement for *electrolessly depositing*. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The rejection of claims 63-65 under 35 U.S.C. 112, first paragraph, has been withdrawn in view of Applicants' amendment.

II. Claims **5, 9, 12-13, 20-21, 24, 28, 30-32, 34, 37, 41, 46, 50, 57, 61-62, 64-65 and 69** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The rejection of claims 5, 9, 12-13, 20-21, 24, 28, 30-32, 34, 37, 41, 46, 50, 57, 61-62, 64-65 and 69 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

**III.** Claims **63-65** have been rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential steps, such omission amounting to a gap between the steps.

The rejection of claims 63-65 under 35 U.S.C. 112, second paragraph, has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

**I.** Claims **1-5** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 1-5 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that the Examiner has failed to appreciate the criticality of and the unexpected results achieved by the claims combination relative ranges of copper to acid.

In response, the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer (MPEP § 2112(I)).

Furthermore, the copper and acid concentrations are not the sole criticality in

eliminating the voids or other defects encountered when electrodepositing occurs, and do not solely achieve the unexpected results achieved by the claimed combination relative ranges of copper to acid because Reid teaches an electroplating method that avoids defects in plated films (col. 2, lines 5-10). The inclusion of *leveler* additives as well as *accelerators* and *suppressors* in the electroplating solution at the bottom-up filling and low aspect ratio filling phases has been shown to *significantly reduce defects* in the metal films (col. 7, lines 40-44).

And if conventional electroplating compositions of copper and acid comprises either a relatively *low acid concentration* whenever there is a relatively *high copper concentration* to *reduce the terminal effect and provide reasonable filling capability*, or a relatively *high acid concentration* whenever there is a relatively *low copper concentration* so that the plating composition will have *good throwing power*, the copper and acid concentrations would not have solely taken part in the elimination of the voids or other defects, but would have also taken part in the electrical conductivity or activity of the electroplating composition.

Claim 1 is open to additives such as levelers, accelerator and suppressors.

As to the claims combination relative ranges of copper to acid, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation (MPEP § 2144.05).

Applicants state that the Examiner fails to likewise consider the specific teaching

away in the reference where the only relative ranges of copper to acid were disclosed.

In response, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiment (MPEP § 2123).

Applicants state that the electroplating compositions set forth in claims 1-5, contrary to conventional wisdom and all existing prior art references of record, include *relatively high copper to relatively high acid concentrations*. *Such compositions* as claimed were examined and found to provide surprisingly but critically superior fill capabilities, particularly copper deposition bottom-up fill capabilities for high aspect ratio features having submicron dimensions (e.g., 0.12 μm trenches) such that the presence of voids is reduced or substantially eliminated altogether.

In response, claims 1, lines 2-3, recite "*about 35* to about 60 g/L copper; about 65 to *about 150 g/l* sulfuric acid". These claim limitation reads on *33 g/L copper* and *153 g/L sulfuric acid*. Is this a *high copper* to *high acid* concentration? It does not appear to be because for both the copper and acid concentrations to be high, wouldn't their concentrations relatively be the same?

Applicants state that the comparison data cannot be ignored as it clearly rebuts any *prima facie* case the Examiner alleges exists. Clearly, in fact Reid specifically discloses the very prior art that Applicants found unsuitable and thus avoided in developing their new and non-obvious relative ranges of copper to acid compositions.

In response, the Examiner is not convinced that the relative ranges of copper to acid presently claimed are new and non-obvious because the ranges were generally known in the art even if levelers, accelerator and suppressors are added to avoid having a poorly plated film.

A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. V. Garlock, Inc.,* 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. Denied,* 469 U.S. 851 (1984). In addition, a known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use, see *In re Gurley,* 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994). Further, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments, see *Merck & Co. v. Biocraft Laboratories,* 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied,* 493 U.S. 975 (1989). See MPEP § 2141.02, MPEP 2145X.D.1 and MPEP § 2123.

Furthermore, claim 1 is open to additives such as levelers, accelerator and suppressors.

Applicants state that the Reid reference in essence teaches away from the presently claim copper and acid relative ranges by teaching only the conventional low copper/high acid.

In response, disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiment (MPEP § 2123).

Applicants state that Reid states the importance of the high acid concentration and low copper concentration: "Also important to wetting is the concentration of acid and salt (copper sulfate) in the electroplating bath. High acid levels are effective in quickly dissolving any surface oxides and achieving wetting of the metal onto which subsequent plating must take place." Col. 5, ll. 33-37. The only teaching or suggestion in Reid for a copper to acid range teaches away from Applicants' claimed relative copper and acid concentration ranges.

In response, the passage recited in col. 5, lines 33-37 relates to the entry phase of Reid's method. Reid teaches that different additives in the electroplating bath play a key role at different phases of the electroplating process (col. 7, lines 36-38). Thus, Reid teaches that the compositions of the electroplating bath would have varied.

Applicants state that the '857 patent, whether considered independently or in combination with the '796 patent, neither teaches nor suggests the compositions of present claim 1.

In response, Applicants' remarks have been fully considered but they are not deemed to be persuasive.

II. Claims **6-14** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 6-14 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

III. Claims **15-18** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 15-18 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

IV. Claims **19-25** have been rejected under 35 U.S.C. 103(a) as being unpatentable

over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 19-25 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**V.** Claims **26-33** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 26-33 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that the ratio of copper to acid equal to about 0.4 to about 0.8 is not taught or suggested by the prior art.

In response, the ratio of copper to acid equal to about 0.4 to about 0.8 is in the 10-60 g/L copper ions and 0-300 g/l acid taught by Reid (col. 7, Table 1). There is no requirement that the ratio be expressly articulated in one or more of the references. The

test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin* 170 USPQ 209 (CCPA 19710; *In re Rosselet* 146 USPQ 183 (CCPA 1960). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In re Simon* 174 USPQ 114 (CCPA 1972); *In re Richman* 165 USPQ 509, 514 (CCPA 1970).

**VI.** Claim **34** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796].

The rejection of claim 34 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**VII.** Claims **35-43** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 35-43 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated

November 23, 2005 and March 8, 2006 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that nothing in Reid teaches or suggests including copper in sulfuric acid at 60-90% of its solubility limit and the Examiner cites to no teaching or suggestion of such in Reid.

In response, including copper in sulfuric acid at 60-90% of its solubility limit is in the 10-60 g/L copper ions and 0-300 g/l acid taught by Reid (col. 7, Table 1). There is no requirement that the ratio be expressly articulated in one or more of the references. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin* 170 USPQ 209 (CCPA 19710; *In re Rosselet* 146 USPQ 183 (CCPA 1960). References are evaluated by what they collectively suggest to one versed in the art, rather than by their specific disclosures. *In re Simon* 174 USPQ 114 (CCPA 1972); *In re Richman* 165 USPQ 509, 514 (CCPA 1970).

Applicants state that in present claim 37, a concentration of about 2 to about 30 ml/l of accelerator is recited. The only specific disclosures (other then the broad ranges disclosed in Table 1 in the '796 Reid patent) teach and suggest an accelerator concentration of 1 ml/l - outside the presently claimed range).

In response, if Reid only intended on using 17.5 g/l copper ions and 175 g/l sulfuric acid, then why did he disclose the exemplary bath compositions for

electroplating of copper in Table 1 (col. 7). Although he doesn't show each g/l value in Table 1 in any examples, he never said not to use them.

**VIII.** Claims **44-52** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 44-52 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**IX.** Claims **53 and 54** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 53 and 54 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be

persuasive.

**X.** Claims **55-56, 58, 60 and 62** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Uzoh et al.** (US Patent Application Publication No. 2002/0033342 A1).

The rejection of claims 55-56, 58, 60 and 62 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Uzoh et al. is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XI.** Claims **57, 59 and 61** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Uzoh et al.** (US Patent Application Publication No. 2002/0033342 A1) as applied to claims 55-56, 58, 60 and 62 above, and further in view of **Basol** (US Patent No. 6,833,063 B2).

The rejection of claims 57, 59 and 61 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Uzoh et al. as applied to claims 55-56, 58, 60 and 62 above, and further in view of Basol is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XII.** Claims **63-65** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Reid** (US Patent No. 6,024,857) ['857].

The rejection of claims 63-65 under 35 U.S.C. 103(a) as being unpatentable over Reid et al. '796 in combination with Reid '857 is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XIII.** Claims **66 and 67** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Wilson et al.** (US Patent Application Publication No. 2005/0178667 A1).

The rejection of claims 66 and 67 under 35 U.S.C. 103(a) as being unpatentable over Reid'796 in combination with Wilson et al. is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XIV.** Claims **68 and 69** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Reid et al.** (US Patent No. 6,793,796 B2) ['796] in combination with **Wilson et al.** (US Patent Application Publication No. 2005/0178667 A1).

The rejection of claims 68 and 69 under 35 U.S.C. 103(a) as being unpatentable over Reid '796 in combination with Wilson et al. is as applied in the Office Actions dated November 23, 2005 and March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XV.** Claims **1-5** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 1-5 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants state that Grandikota neither teaches nor suggests the acid range

claimed in any of the presently considered claims of the current application and the rejection is improper.

In response, claim 1 of Grandikota teaches the acid range (page 3). The Examiner is not convince that the presently claimed acid ranges are non-obvious from the teachings of Grandikota.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XVI.** Claims **6-14** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 6-14 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XVII.** Claims **15-18** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 15-18 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XVIII.** Claims **19-25** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 19-25 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XIX.** Claims **26-33** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 26-33 under 35 U.S.C. 103(a) as being unpatentable over

Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XX.** Claim **34** has been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1).

The rejection of claim 34 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXI.** Claims **35-43** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 35-43 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXII.** Claims **44-52** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 44-52 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXIII.** Claims **53 and 54** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Gabe et al.** (US Patent Application Publication No. 2003/0066756 A1).

The rejection of claims 53 and 54 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Gabe et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXIV.** Claims **55-62** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination **Basol** (US Patent No. 6,833,063 B2) and **Uzoh et al.** (US Patent Application Publication No. 2002/0033342 A1).

The rejection of claims 55-62 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination Basol and Uzoh et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXV.** Claims **66 and 67** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Reid et al.** (US Patent No. 6,793,796 B2) and **Wilson et al.** (US Patent Application Publication No. 2005/0178667 A1).

The rejection of claims 66 and 67 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Reid et al. and Wilson et al. is as applied in

the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

**XXVI.** Claims **68 and 69** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **Grandikota et al.** (US Patent Application Publication No. 2002/0112964 A1) in combination with **Reid et al.** (US Patent No. 6,793,796 B2) and **Wilson et al.** (US Patent Application Publication No. 2005/0178667 A1).

The rejection of claims 68 and 69 under 35 U.S.C. 103(a) as being unpatentable over Grandikota et al. in combination with Reid et al. and Wilson et al. is as applied in the Office Action dated March 8, 2006 and incorporated herein.

The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

***Response to Amendment***

***Claim Objections***

Claim **65** is objected to because of the following informalities:

Claim 65

line 4, the word "a" should be amended to the word -- the -- because a mixture of

copper and sulfuric acid wherein the ratio in g/L of copper to acid is equal to about 0.3 to about 0.8 is the same as that recited in claim 65, lines 2-3.

If it is not, then what is the different between the mixture of copper and sulfuric acid wherein the ratio in g/L of copper to acid is equal to about 0.3 to about 0.8 (from claim 65, lines 4-6) and the mixture of copper and sulfuric acid wherein the ratio in g/L of copper to acid is equal to about 0.3 to about 0.8 (from claim 65, lines 2-3)?

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

Claim **62** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 62

lines 3-4, it appears that the "glycol-based copper-deposition suppressor" is the same as the glycol-based suppressor recited in claim 55, line 6. However, it is unclear if it is. If it is not, then what is the relationship between the glycol-based copper-deposition suppressor and the glycol-based suppressor?

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Edna Wong
Primary Examiner
Art Unit 1753

EW
June 4, 2006